AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1-3. (Cancelled)

4. (Currently amended) A method for manufacturing a semiconductor device, comprising the steps of:

forming a multilayer film including an insulation layer ~~and either polycrystalline silcon or amorphous silicon~~ on a semiconductor substrate;

forming a resist mask by patterning a resist applied on said multilayer film;

etching said multilayer film using said resist mask;

removing said resist mask after completing said etching; and

processing said semiconductor substrate to create a trench, having an upper end portion, utilizing said multilayer film ~~having~~ from which said resist has been removed as a mask,

wherein said step of processing the semiconductor substrate includes providing a roundness to the upper end portion of the trench by adhering a reaction product composed at least of said semiconductor substrate and a reaction gas to side wall portions of said multilayer film.

5. (Previously presented) A method for manufacturing a semiconductor device according to claim 4, wherein said multilayer film comprises at least a silicon nitride layer and a silicon oxide layer.

6. (Previously presented) A method for manufacturing a semiconductor device according to claim 4, characterized in performing a desired round-off processing by controlling the reaction product, gaseous species, and gas flow rate to round off the upper portion or a bottom portion of said trench.

7. (Currently amended) A method for manufacturing a semiconductor device, comprising the steps of:

forming a multilayer film including an insulation layer ~~and either polycrystalline silicon or amorphous silicon~~ on a semiconductor substrate;

forming a resist mask by patterning a resist applied on said multilayer film;

etching said multilayer film using said resist mask;

removing said resist mask after completing said etching; and

processing said semiconductor substrate to create a trench, having an upper portion, utilizing said multilayer film ~~having~~ from which said resist has been removed as a mask,

wherein said step of processing the semiconductor substrate includes providing a round-off processing to the upper portion of the trench of said semiconductor substrate, using a reaction gas including hydrogen.

8. (Previously presented) A method for manufacturing a semiconductor device according to claim 7, wherein said multilayer film comprises at least a silicon nitride layer and a silicon oxide layer.

9. (Previously presented) A method for manufacturing a semiconductor device according to claim 7, characterized in performing a desired round-off

processing by controlling the reaction product, gaseous species, and gas flow rate to round off the upper portion or a bottom portion of said trench.

10. (Cancelled)

11. (Currently amended) A method for manufacturing a semiconductor device, comprising the steps of:

forming a mask layer having openings corresponding to element isolation regions on a semiconductor substrate;

etching said semiconductor substrate utilizing said mask layer as a mask using a mixed gas including CHF_3 and HBr, to form upper end portions of a trench in tapered shape by adhering a reaction product composed of the mixed gas and the semiconductor substrate to the side wall of the mask layer, thereby forming an adhered film; and

etching said semiconductor substrate utilizing said mask layer as a mask using a mixed gas including Cl_2, O_2 and HBr to form a main trench portion and removing the adhered film as a mask to round off the upper end portion of the trench in the tapered shape,

wherein a desired round-off processing is performed by controlling etching time and bias voltage of the step of forming the tapered shape and the step of forming the main trench portion.

12. (Currently amended) A method for manufacturing a semiconductor device according to claim 11, wherein the ratio of mixed gas including CHF_3 and HBr is 1:5~~, and the ratio of mixed gas including Cl_2, O_2 and HBr is 5:1:20~~.

13. (Currently amended) A method for manufacturing a semiconductor device according to claim 4, wherein the reaction gas includes a halogen system gas selected from the group consisting of CHF_3, Cl_2 and HBr ~~CxFy, F_2, HF, Cl, HCl, HBr and HI~~.

14. (Currently amended) A method for manufacturing a semiconductor device according to claim 7, wherein the reaction gas includes a halogen system gas selected from the group consisting of CHF_3, Cl_2 and HBr ~~CxFy, F_2, HF, Cl, HCl, HBr and HI~~.